KARL CZOERNIG AND THE STATE STATISTICS OF THE HABSBURG MONARCHY

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Abstract

The beginnings of the first specialized body for managing state statistics of the Austrian Empire, in the form of a small statistical office, go back to 1829. Later, in 1840, this office developed into an independent Directorate of administrative statistics. The radical quantitative development and significant modernization of work of the Directorate happened mainly thanks to Karl Czoernig (1804–1889), who led the Austrian national statistics in the years 1841–1865. The transition from a mechanical summarization of less credible data inconsistently collected by auxiliary officers to a professional statistical processing and later to scientific analysis of the results started already in 1840s thanks to the "father of Austrian official statistics". Czoernig put huge importance on the necessary qualification of his staff and, he was in charge of the series of lectures on statistics for employees of various central offices of the monarchy.
Management of the Austrian state statistics joined the starting international cooperation in the field. The third International Statistical Congress was held in year 1857 in Vienna. Following the model of Quételet of Brussels the Central Statistical Commission was founded in Austria in 1863 as the authority managing the Directorate of administrative statistics. Czoernig became the first president of this commission. He was born in Černousy (Tschernhausen) in North Bohemia (near Szklarska Poręba), he studied law in Prague and Vienna. He was conferment for merits in year 1852 as Freiherr von Czernhausen. From his extensive scientific activities and publications, we focus primarily on several notable early works related to Bohemia.

Key words: *Karl Czoernig, history of statistics, Austrian state statistics*

JEL Codes: *B16, B23, N33*

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1. Introduction

Unlike other scientific disciplines, the history of the statistics in our land is not sufficiently elaborated. Authors of this contribution are continuously trying to contribute to the improvement of this issue resulting into the set of papers about the development of statistics in XIX. and XX. centuries - e.g. Závodský (1992), Závodský and Šimpach (2014, 2015), Kodera, Závodský and Šimpach (2015) etc.

Forthcoming 100th anniversary of the Czechoslovakian state statistics is an inspiration for historical evaluation of the past, when the land statistical offices[1] in our territory supplemented the activities of state statistics, centralized in Vienna. Institutional development of statistical services of Hapsburg monarchy lasted nine decades. The most significant era of the development was the "Czoernig's era" (1841–1865).

Czoernig, similarly to number of other outstanding statisticians of the Austrian empire (J. N. Zizius, J. Springer, G. N. Schnabel, J. Hain etc.), was originally from Bohemia. In our paper, we focus especially on Czoernig's publications that have the relation to Bohemia and on Czoernig's merits on modernization of state statistics of Habsburg monarchy.

Figure 1: Karl Czoernig.

Source: TRIPOTA: Karl von Czoernig-Czernhausen, Portrait-ID: 385_1074, http://www.tripota.uni-trier.de/

2. Brief curriculum vitae

Karl Joseph Czoernig was born on 5th May 1804 in a family of earl officer in Černousy (Tschernhausen at that time) in North Bohemia at the borders of three countries – Bohemia, Saxony and Prussia[2]. He attended grammar schools in Jičín and in Prague. Consequently, in

[1] For details see e.g. Závodský and Šimpach (2016).

[2] Municipality lies northwest from Szklarska Poręba (Schreiberhau at that times).

years 1823–1828, he studied at universities in Prague and Vienna at the Faculty of Law. He passed the exams from statistics in his 1st year of study in Prague at prof. G. N. Schnabel.

After his studies, he worked in state services, mostly in Trieste and in Milan. At the same time, he published his first works about towns Liberec, Venezia etc. and he prepared systematic statistical paper about Lombardian-Venezia kingdom, that was a part of Habsburg monarchy at the time. However, his work stayed unfinished[3].

Czoernig was asked to be the head of the new-created Imperial-Royal (I-R) Directorate of Statistics Administration in 1841 (K. k. Direktion der administrativen Statistik). He was in the lead of Austrian state statistics until his retirement in year 1865 (see below). Czoernig held also other important posts simultaneously, particularly at the Ministry of Trade - where he was dealing with the development of rails in monarchy, naval and Danube steam cabinets, more than ten years he oversaw the Central Heritage Commission and in year 1854, he was send to a business trip to Paris, Amsterdam and London. Czoernig became a member of many Austrian and foreign scientific societies. He was awarded for his scientific and publication activities by honorary doctorate (dr. h. c.) by Prague university at the event of its 500th foundation anniversary in 1848. In the year 1848 of revolution, Czoernig was voted to represent his home region at the parliament in Frankfurt am Main. He worked in financial and in economy committee.

Czoernig gained many Austrian and foreign awards for his merits. He was as Freiherr von Czernhausen (according to his born municipality) nobilitated in year 1852. Motto „Wissenschaft ist Macht“(= „Scientia est potentia“ of Francis Bacon) became a part of his coat of arms. Because of his serious sickness Czoernig had to retire in year 1865. He died on 5th October 1889 in town Görz[4]. Modern biography of Czoernig does not exist yet.

3. Czoernig and organization of Austrian state statistics

Beginnings of statistics of population and economic statistics in Habsburg monarchy are linked with the reign of Maria Teresia and Joseph II. Specialized office for organization of state statistics was established only in 1829, with a long delay from many European countries.

Statistical office (at first a miniature one), until then a part of the General Accounting Directorate (Generalrechnungsdirektorium), was transformed into separate Directorate of Administrative Statistics (K. k. Direktion der administrativen Statistik) in year 1840. Karl Czoernig, already known as the author of remarkable statistical publications (see below), was summoned from Milan to take the function of the director of the Directorate the following year.

It was already in 1840s, when the Directorate was enlarged and the statistical work enhanced thanks to Czoernig. Since then, the work had not been based on mechanic summarization of low reliable data, nor surveyed by non-specialized officers, but it has started to be professionally methodically managed and the work has started adopting scientific principles.

Until then, the almanac *Tafeln zur Statistik der österreichischen Monarchie* was published only in limited volume (100 pcs) and as a secret it only was available to selected state officials and officers. Thanks to Czoernig, the level of *Tafeln* significantly increased since volume 1841[5]. Czoernig enforced also its release for public (partly since volume 1842, fully since

[3] Wurzbach (1858), pp. 117-120.

[4] Today Gorizia (on border between Italy and Slovenia).

[5] Unlike in current practice the yearbook at that times contained data for a year in the title and was published in one of the following year, when the data were completed.

double-volume 1845/46)[6]. This made it available to perform the analysis of published data also to scholars outside Directorate. Czoernig also placed importance on national economy statistics, that has been so-far left aside. This focus even deepened after subsuming the Directorate under newly created Ministry of Trade in year 1848 (so far, the Directorate was individual office subordinate to presidium of General Accounting Directorate).

In order to publish actual results of particular statistical surveys (often with analysis in text form), the Directorate published periodical journal *Mittheilungen aus dem Gebiete der Statistik* (under this title since 1852) since year 1850 (usually quarterly). Besides *Tafeln*, since double-year 1861/62, a statistical almanac of the monarchy (*Statistisches Jahrbuch der österreichischen Monarchie*) was also published annually, where the results of actual statistical surveys for particular year were published on approximately 500 pages. A brief handbook *Statistisches Handbüchlein* and others dedicated for wider audience also started to be published in 1860s.

From a broad range of statistical surveys of those times, let us mention census in year 1857, that was done uniformly according to precise instructions on the whole territory of the monarchy. The census summarized not the number of present inhabitants, but local inhabitants, and for the first time one definite moment was set (last hour of 31st October). The process of data collection was yet not secured by the army, but political offices (municipalities and newly established districts). Despite of some minor failures, it is possible to claim, that the census in year 1857 already fulfilled majority of requirements on modern population census.

The experiences of foreign statisticians were used during population census in year 1857. Austrian Statistician Service actively joined developing international cooperation. Czoernig together with other Austrian statisticians took part already in the 1st International statistical congress, that was initiated by Adolph Quételet in year 1853 in Brussel, and in the 2nd congress in Paris two years later. Czoernig was then the main organizer of the 3rd congress, that took part in Vienna in year 1857. The participation was high, there were 542 statisticians from many countries.

International statistical congresses were focused mainly on the issues of office statistics, purely scientific contributions were in significant minority. Mainly the questions of measuring units, unification of the methods of data collection, processing and publication of results of statistical surveys, or population census were solved (discussed). Particularly the congress in Vienna was attended also by statisticians from Czech lands, e.g. prof. Karel Kořistka, who was working in the section for graphical illustration, that also concerned Czoernig and his Vienna Directorate[7].

In year 1859, when the Ministry of Trade was temporary cancelled, Czoernig's Directorate of Administrative Statistics returned to General Accounting Directorate, that was meanwhile on the Highest Accountancy Control Office (Oberste Rechnungskontrollbehörde). However, by leaving the Ministry of Trade Czoernig and his Directorate loose immediate contact with management of economy and patronage of the management of the ministry, that made it easier for the Directorate to obtain needed data for statistics of national economy.

Czoernig found the solution of this tricky situation in resolutions of the 2nd International statistical congress in Paris (1855), that is according to Quételet's example in Brussel recommending to established in each state statistical commission, that would enable the state statistics to gain corresponding place in system of state administration. Czoernig's initiative was finally successful, emperor Franz Joseph I. decided to establish Central Statistical

6 Geschichte and Ergebnisse (1979), pp. 27-35.

7 About history of graphical illustration in statistics is e.g. a study by Beniger and Robyn (1978).

Commission (K. k. statistische Zentralkommission) on 31st January 1863. Its first president Freiherr Czoernig von Czernhausen was nominated by the emperor.

Central Statistical Commission was a collective organ, consisting of deputies of the ministries and other central offices, as well as other representatives of science and economy (as extraordinary members). Commission ensured mutual cooperation of the organs of state administration and state statistics. It assembled a plan of the work of the state statistics of the monarchy and ensured its fulfilment. Commissions were held regularly once a month[8]. Directorate of Administrative Statistics was under the Commission as its executive organ. This principle of the management of the state statistics was taken over from Brussels and applied in other countries, too. In January 1919, it became a part of the law about state statistics in Czechoslovakia.

Central Statistical Commission and Directorate did not have any local branch offices in countries of the monarchy. Later established statistical offices (in the individual countries of the monarchy) were part of land (autonomous) administration and were almost independent on Vienna offices.

Czoernig had been a president of Central Statistical Commission for less than three years. However, he managed to build new organization of state statistics. High attention was paid to popularisation of statistics and its methods by the workers of the ministries and other central organs. He tried to explain them, that statistics is not "a grave yard of numbers", that knowledge of the methods of statistics and ability to interpret the results or the surveys and analysis will help them solve work problems. Starting in autumn 1864, there were repeating cycles of lectures of leading experts about statistics organized especially for young workers of the central offices of the monarchy. Czoernig himself, as one of the lecturers, was trying to raise officers „Liebe und Lust zur Statistik" (love to statistics and joy from it)[9] in younger administrative officers.

For the sake of completeness, let us mention, that the activities of Central Statistical Commission and Directorate were limited on Austrian part of empire after the division of the monarchy of Austrian-Hungary (1867). Austrian national statistical services were again assigned to Ministry of Trade in year 1869. However, yet following year, it was assigned under the Ministry of Religion Issues and Education permanently.

Overworked and seriously ill Czoernig had to retire in November 1865. He still participated in some International Statistical Congresses, after the foundation of the International Statistical institute (1885) he was voted to be an honoured member. He also published several more publications, particularly about the Austrian Littoral (Küstenland) – area, where Czoernig lived and died in year 1889 and that belonged to Austrian-Hungarian at that times.

4. Czoernig and statistics in Bohemia

Despite of the fact that Czoernig had never stayed in Bohemia for longer time after his studies, he still considered Bohemia to be his homeland and himself a member of bilingual politic nation in Bohemia in the spirit of Bernard Bolzano's ideas. It is proven for example by Kořalka (2006) and quotations from Czoernig's letters (p. 145 and the following pages). From wide range of Czoernig's activities we focus on statistical works that are related to Bohemia – three publications from years 1827–1831.

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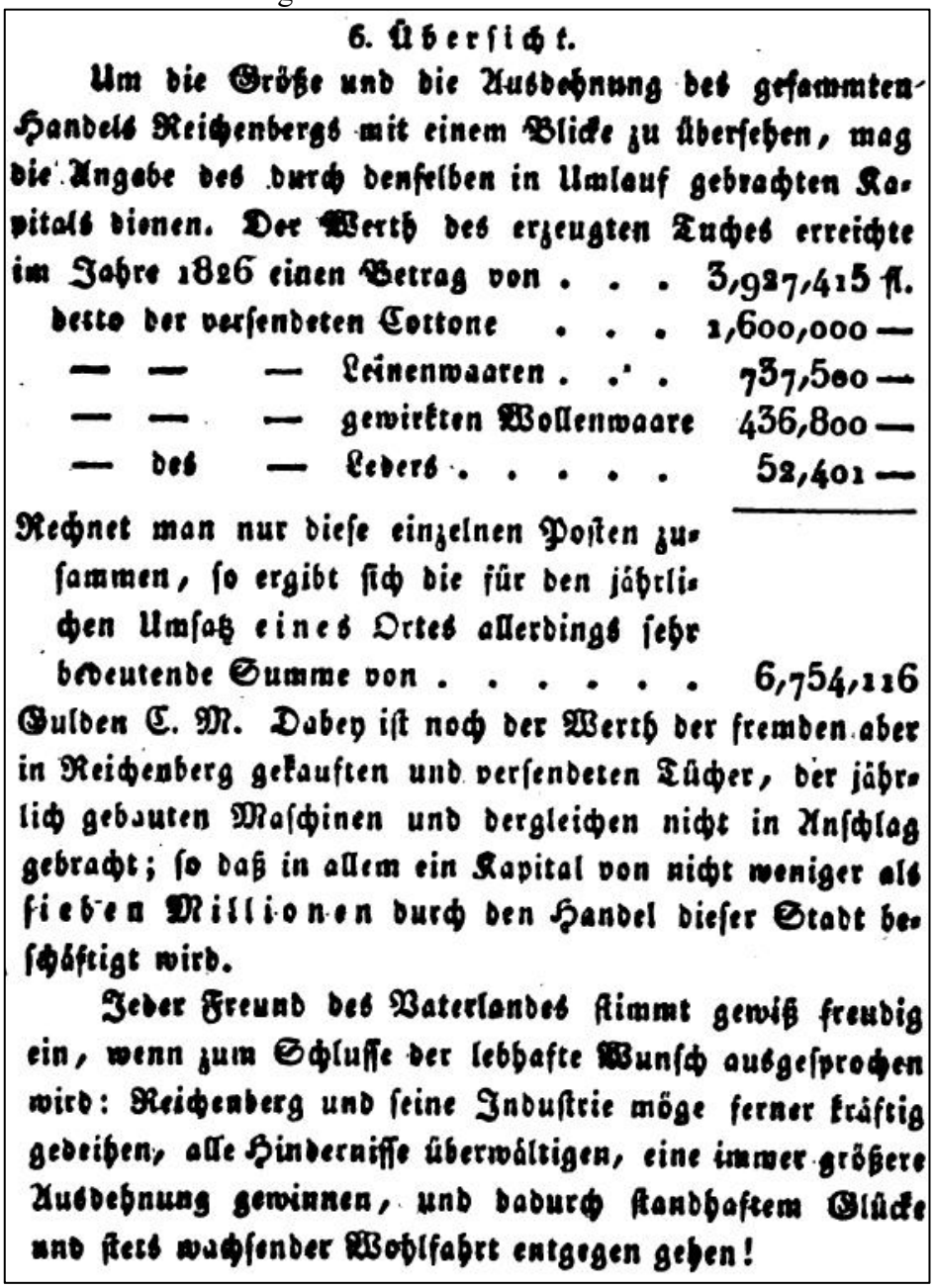
8 Austrian bureaucracy was famous for its perfectionism. According to Rules of Procedure (§ 10) the meeting took place always the first Friday in the month at 11 o´clock. See Geschichte and Ergebnisse (1979), p. 44.

9 Von der Direction (1990), pp. 8-9.

Figure 2: Conclusion of Czoernig's treatise on Liberec.



6. Übersicht.

Um die Größe und die Ausdehnung des gesammten Handels Reichenbergs mit einem Blicke zu übersehen, mag die Angabe des durch denselben in Umlauf gebrachten Kapitals dienen. Der Werth des erzeugten Tuches erreichte im Jahre 1826 einen Betrag von . . . 3,927,415 fl.

dette	der versendeten Cottone	. . .	1,600,000 —
—	— —	Leinenwaaren . . .	737,500 —
—	— —	gewirkten Wollenwaare	436,800 —
—	des —	Leders	52,401 —

Rechnet man nur diese einzelnen Posten zusammen, so ergibt sich die für den jährlichen Umsatz eines Ortes allerdings sehr bedeutende Summe von . . . . . 6,754,116 Gulden C. M. Dabey ist noch der Werth der fremden aber in Reichenberg gekauften und versendeten Tücher, der jährlich gebauten Maschinen und dergleichen nicht in Anschlag gebracht; so daß in allem ein Kapital von nicht weniger als sieben Millionen durch den Handel dieser Stadt beschäftigt wird.

Jeder Freund des Vaterlandes stimmt gewiß freudig ein, wenn zum Schlusse der lebhafte Wunsch ausgesprochen wird: Reichenberg und seine Industrie möge ferner kräftig gedeihen, alle Hindernisse überwältigen, eine immer größere Ausdehnung gewinnen, und dadurch standhaftem Glücke und stets wachsender Wohlfahrt entgegen gehen!

Source: Czoernig (1827-1828), vol. XVIII, iss. 86-87, p. 480.

a) *Contributions to geography of Bohemia* – Czoernig (1827–1828) introduced the paper published in Vienna in six continuations in two volumes of that-time famous *Hormayr's Archiv*. He focused on Liberec (called Reichenberg at that time), that was a fast-developing centre of industry and trade at the while. Czoernig's paper is written according to the conventions of statistical-topographic works of the end of XVIIIth century and first decades of XIXth century. Its style is not scientific, but it is adjusted to "popular-educational" focus of the magazine. Beside usual topographic information and history of the city, Czoernig focuses mainly on the industry, craft and trade. Describing the diverse textile production, he provides specific data about the numbers of workers, machinery, manufacturing volume in physical and financial terms, etc. The last part of the article is devoted to similar analysis of Jablonec n. N. (Gablonz) and it provides data (and estimates of data) about Jablonec's industrial production

especially in the field of glass jewellery. Czoernig challenged the statisticians of the monarchy to systematically examine the industry of Bohemia and Moravia.

b) *Topographical-historical-statistical description of Liberec. Including the appendix with description of Jablonec n. N.* – Czoernig (1829). This book (241 p.) is again devoted to Liberec, he hometown of his parents. Even though the structure of the book follows structure of traditional statistical-topographic survey of its time, it stands out from them because of its scientific excellence and modernity. Back then it was customary to use mostly verbal characteristics, occasionally combined with some numerical data. However, Czoernig's text is using many relevant numerical data, from which he calculates means and various ratios, that enables him to compare Liberec with many European and non-European cities. When calculating indices and other comparative figures he uses mostly decimal numbers (unlike fractions with different denominators, that previously prevailed in the statistical literature).

The section about industry and craft is in comparison with his previous journal article somewhat broadened and deepened. Book especially contains precise analysis (almost 90 pages) of demographic relations based on official statistics for one decade (1818–1827). Czoernig manifests his excellent knowledge of the works of classical and modern statisticians and political arithmeticians here.

It is worth to point out on Czoernig's examining of seasonality of demographic phenomena. Data about the number of births and deaths are seasonally adjusted and recalculated on 30days months and seasonality is characterized by the indices, for example "the average number of deaths per month is set to be equal to 1" (p. 163). Also, the idea of sorting the months according to fertility (the anticipated month of conception is also given) and mortality in Liberec is interesting and a comparable information from several other towns is provided – see Fig. 3.

c) *Treatise in the field of political arithmetic. The censuses and the law of mortality in general and with particular emphasis on England* – Czoernig (1831). Patriotic Museum (now the National Museum) published from year 1827 two separate museum magazines – German and Czech. František Palacký (1798–1876) was the editor of both magazines. German Museum Magazine with the spirit of provincial patriotism (the name in years 1827–1829 was *Monatschrift der Gesellschaft des vaterländischen Museums in Böhmen*, in years 1830–1831 *Jahrbücher des böhmischen Museums für Natur- und Länderkunde, Geschichte, Kunst und Literatur)* had held high scientific level since its beginning, but despite that it stopped printing already at the end of 1831.

German Museum Magazine published many papers, news and reviews from the field of statistics, especially meteorological, economical and demographical during its five-year existence. For example, Georg Norbert Schnabel, the professor of statistics in Prague university (1791–1857), published his comprehensive laudatory review of Czoernig's book about Liberec in this magazine. Also, Palacký, historiographer of Bohemian kingdom, published here two remarkable articles about the development of the Bohemian inhabitants. He also managed to use simpler methods of political arithmetic in the analysis.

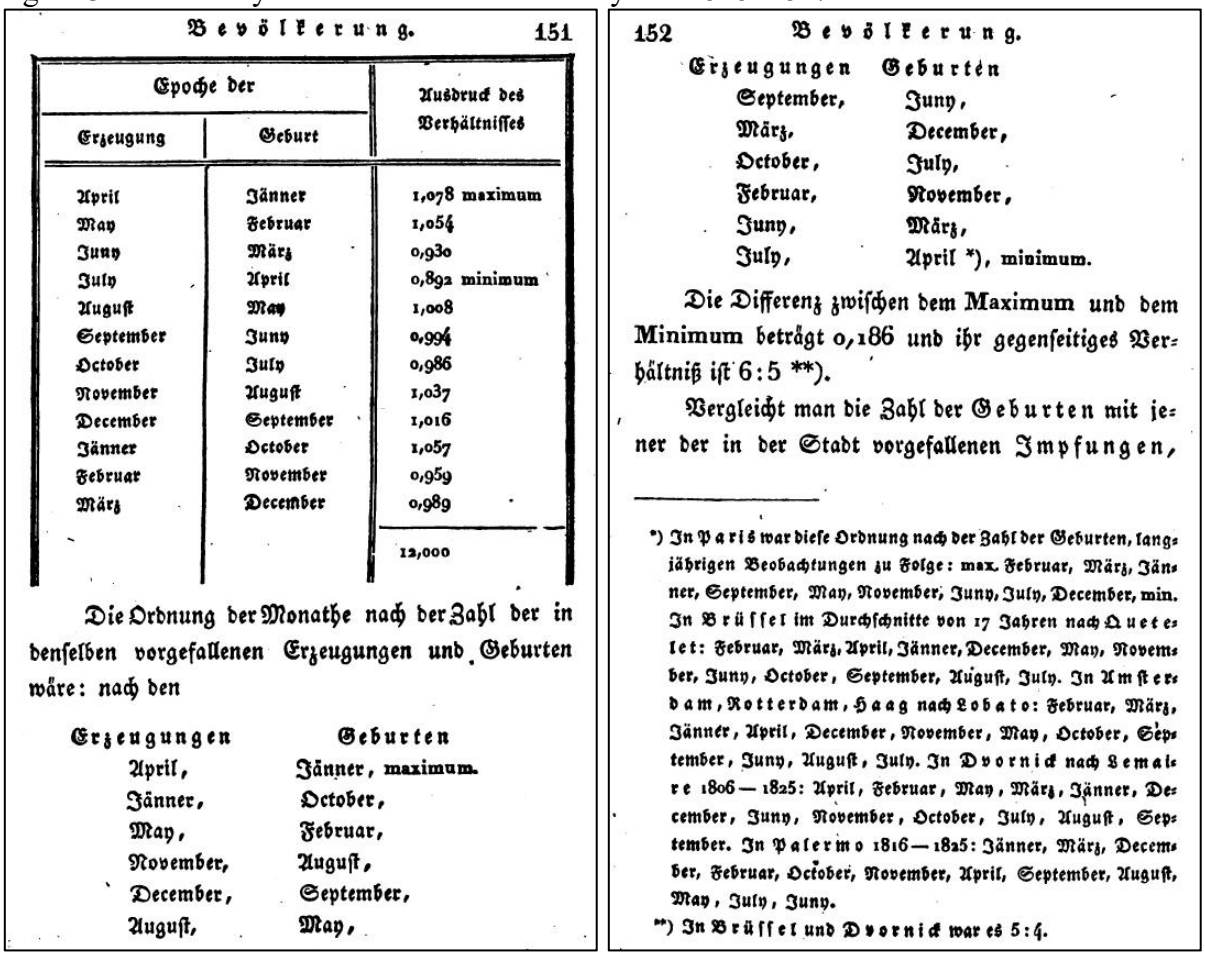
According to Kořalka (2006), Czoernig appreciated Palacký's statistical articles in their correspondence and he wrote a short treatise about Trieste (1830) for German Museum Magazine. Czoernig managed to publish a comprehensive explanation of the political arithmetic (ad c) as extensively commented translation of the article of British journal into German[10] in the very last issue of the magazine.

Czoernig's initial attempt to define political arithmetic as a science discipline is already interesting: "Political arithmetic deals with the visualisation of such phenomena in the life of

[10] Proposals for an improved Census of the Population (*Edinburgh Quarterly Review,* 1829, Nr. 3).

the population of the state that can be expressed by quantitative relations ...” (p. 22). It then places political arithmetic in the group of “state sciences” (it involves a state and medical sciences) alongside with its “older sister” - statistics. Czoernig has correctly recognized some limits of the development of political arithmetic as a field of science - before the integration into modern statistical science, which has taken place over the next decades. He points out not only on the lack of reliable and accurate data (if they were found, they were often kept secret), but mainly to the unclear conception of the discipline[11], that was developing outside universities departments, often thanks to amateurs and advisors of insurance and similar companies.

Figure 3: Seasonality of births in Liberec in the years 1818–1827.



Bevölkerung. 151

Epoche der Erzeugung	Epoche der Geburt	Ausdruck des Verhältnisses
April	Jänner	1,078 maximum
May	Februar	1,054
Juny	März	0,930
July	April	0,892 minimum
August	May	1,008
September	Juny	0,994
October	July	0,986
November	August	1,037
December	September	1,016
Jänner	October	1,057
Februar	November	0,959
März	December	0,989
		12,000

Die Ordnung der Monathe nach der Zahl der in denselben vorgefallenen Erzeugungen und Geburten wäre: nach den

Erzeugungen	Geburten
April,	Jänner, maximum.
Jänner,	October,
May,	Februar,
November,	August,
December,	September,
August,	May,

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Erzeugungen	Geburten
September,	Juny,
März,	December,
October,	July,
Februar,	November,
Juny,	März,
July,	April *), minimum.

Die Differenz zwiſchen dem Maximum und dem Minimum beträgt 0,186 und ihr gegenſeitiges Verhältniß iſt 6:5 **).

Vergleicht man die Zahl der Geburten mit jener der in der Stadt vorgefallenen Impfungen,

*) In Paris war dieſe Ordnung nach der Zahl der Geburten, langjährigen Beobachtungen zu Folge: max. Februar, März, Jänner, September, May, November, Juny, July, December, min. In Brüſſel im Durchſchnitte von 17 Jahren nach Quetelet: Februar, März, April, Jänner, December, May, November, Juny, October, September, August, July. In Amſterdam, Rotterdam, Haag nach Lobato: Februar, März, Jänner, April, December, November, May, October, September, Juny, August, July. In Dvornick nach Lemaire 1806—1825: April, Februar, May, März, Jänner, December, Juny, November, October, July, Auguſt, September. In Palermo 1816—1825: Jänner, März, December, Februar, October, November, April, September, August, May, July, Juny.

**) In Brüſſel und Dvornick war es 5:4.

Source: Czoernig (1829), pp. 151-152.

Czoernig also briefly discusses the development of recent political arithmetic in England, France and Germany. He considers the work of Styrian professor Joseph Kudler (1786–1853) to be the first significant attempt to apply these methods in the Austrian Empire. He quotes authors from Bohemia: Palacký, Stelzig[12] and himself (book about Liberec).

In the beginning of the translated British article he explains the need for the implementation of a reliable census, that did not have a long tradition in England. The first reliable census in England was performed only in year 1801, nearly half a century after the

[11] In comparison with the statistics, “political arithmetic still lacks the Schlözer” (p. 23). A. L. Schlözer (1735─1809), professor at university in Göttingen, was a respected theoretic of classical (university) statistics.

[12] Franz Alois Stelzig (1784─1856), official doctor in Prague, published especially in the German Museum Magazine remarkable works in the field of demographic statistics including the design of own life tables.

Habsburg monarchy. Also, alternative methods of determining population estimates are discusses and he points on their imperfections in the article. These were mainly the estimation of population based on the determined number of houses and the projected average number of people per house or based on the detected number of births (possibly dead) and the expected ratio of the number of births (deaths) to state of population.

The next section of the article explains the principle of life tables construction and calculate certain derived characteristics – the probability of living to a certain age, modal length of life (wahrscheinliche – künftige – Lebensdauer) and life expectancy (mittlere Dauer des menschlichen Lebens).

The author discusses the practices of the Dutch political arithmetician Willem Kersseboom (1691–1771), that compiled his life tables based on customer data of pension company (for 125 years) and based on data about total population. Further he mentions French mathematician, mechanician and political arithmetician Antoine Déparcieux (1703–1768), who analysed the length of life of friars and members of tontine[13]. Both had available relatively accurate data for the construction of their life tables. Regarding noteworthy Englishmen in the field, the author of the article presents especially the work of philosopher and economist Richard Price (1723–1791), who was concerned with political arithmetic in the framework of his application of probabilistic methods. (He is known as a publisher of T. Bayes's works after his death.) Another Englishman mentioned in the article is an actuary of insurance company Joshua Milne (1776–1851). He assembled his life tables based on carefully collected data, but again only for a small sample of the total population – inhabitants of the city of Carlisle.

The assessment of the development of mortality over time (due to changing living conditions), as same as about the necessity of respecting the territorial differences and various relations in mortality among the owners of lifetime rents and members of tontines on one side and the total population on the other side are only a few of the benefits of the work. Exactly these differences have been usually underestimated since the days of J. P. Süßmilch, who absolutized general (global) validity of some demographic patterns and characteristics, on which discovery he had a significant merit[14].

The author demonstrates statements of gradual decline in mortality in Europe on specific calculations for each country from which he managed to get necessary dat. Czoernig tracks the development of the Austrian Empire in broad footnotes (there are often quotations of F. A. Stelzig about demographic development in Bohemia and especially in Prague) and in other certain countries.

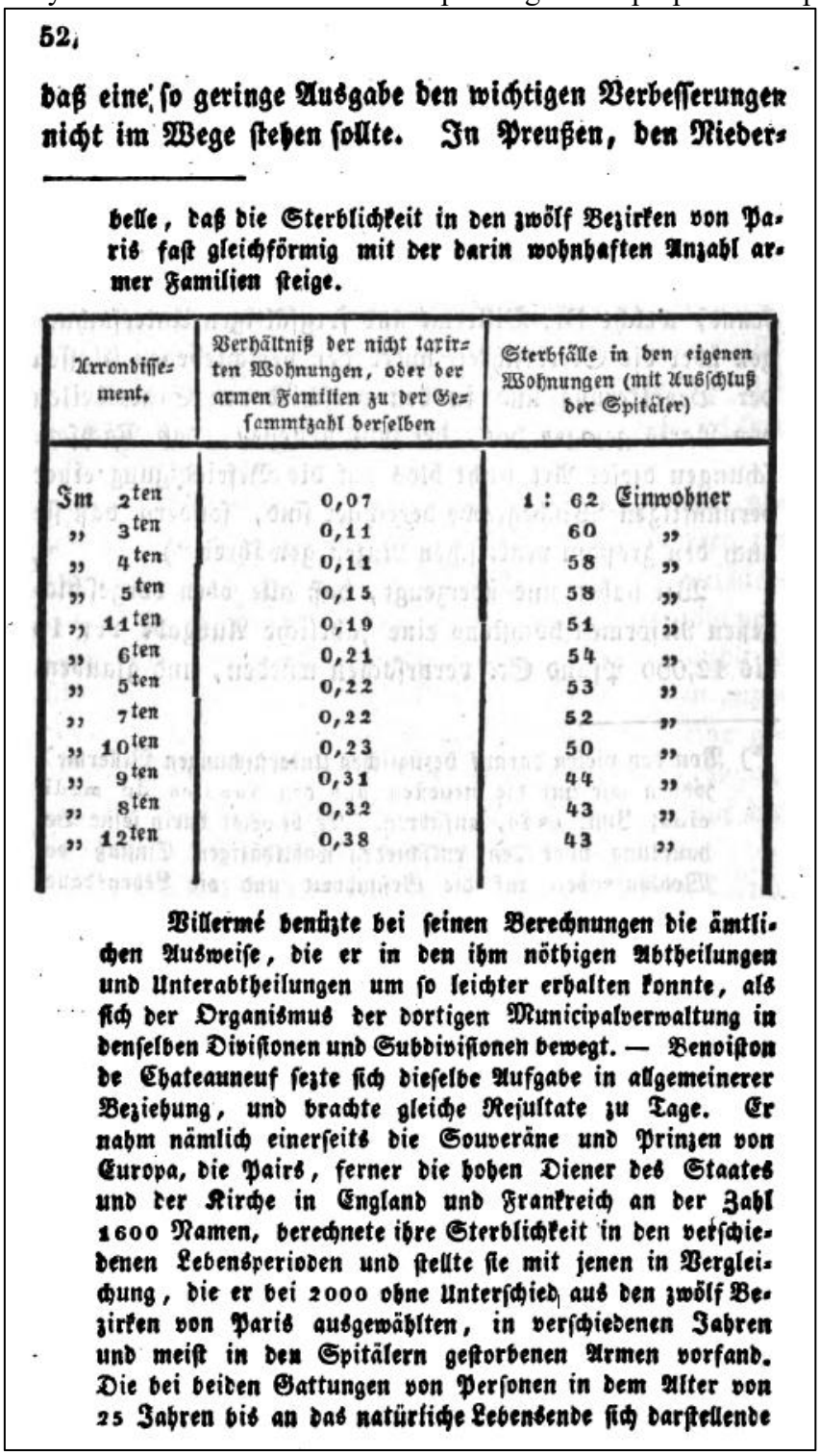
Czoernig demonstrated a profound knowledge of foreign literature in the field of political arithmetic and statistic. We consider a quote of French statistician Louis-René Villermé (1782–1863), who focused in his surveys on the questions of the dependence of mortality on economic and social relations, the most interesting. Czoernig reproduced the table that compares the proportion of poor families in the various districts of Paris with a mortality rate (ratio of deaths to the state of population) – see Fig. 4 here. Data in the table demonstrates obvious dependence of both indicators – with increasing ratio of poor (from 7% to 38%) the

[13] Tontines (named after the author of this idea L. Tonti) was (since XVIIth century) insurance cooperatives whose members (at the same age) to a certain age paid premiums and then receive a lifetime pension. Annually paid amount was divided among still living members and was calculated in the way, that saved capital (according to the expectations) was exhausted until the end of life of the longest living insured. It is obvious that for the operation of similar insurance (tontines existed mainly in France and England) was necessary to know the best the law of mortality. This lead to a further development of Western European political arithmetic. Political arithmeticians on the other hand, gained reliable empirical data from here.

[14] The Prussian evangelic clergyman Johann Peter Süßmilch (1707–1767) already by the name of his famous work *Die göttliche Ordnung in den Veränderungen des menschlichen Geschlechts…* (1741) declared his belief that discovered demographic conditions are essentially the general global "divine order".

mortality rate increases (from 1 : 62 to 1 : 43). This is probably the first information in our literature about the possibility of examining the relationship between quantitative indicators. Before F. Galton (70s and 80s years of XIXth century) none of the world statisticians tried to construct the certain quantitative characteristic of correlation dependence.

Figure 4: Mortality in various Parisian districts depending on the proportion of poor families.



52.

daß eine so geringe Ausgabe den wichtigen Verbesserungen nicht im Wege stehen sollte. In Preußen, den Nieder-

belle, daß die Sterblichkeit in den zwölf Bezirken von Paris fast gleichförmig mit der darin wohnhaften Anzahl armer Familien steige.

Arrondisse-ment.	Verhältniß der nicht taxirten Wohnungen, oder der armen Familien zu der Gesammtzahl derselben	Sterbfälle in den eigenen Wohnungen (mit Ausschluß der Spitäler)
Im 2ten	0,07	1 : 62 Einwohner
„ 3ten	0,11	60 „
„ 4ten	0,11	58 „
„ 5ten	0,15	58 „
„ 11ten	0,19	51 „
„ 6ten	0,21	54 „
„ 5ten	0,22	53 „
„ 7ten	0,22	52 „
„ 10ten	0,23	50 „
„ 9ten	0,31	44 „
„ 8ten	0,32	43 „
„ 12ten	0,38	43 „

Villermé benüzte bei seinen Berechnungen die ämtlichen Ausweise, die er in den ihm nöthigen Abtheilungen und Unterabtheilungen um so leichter erhalten konnte, als sich der Organismus der dortigen Municipalverwaltung in denselben Divisionen und Subdivisionen bewegt. — Benoiston de Chateauneuf sezte sich dieselbe Aufgabe in allgemeinerer Beziehung, und brachte gleiche Resultate zu Tage. Er nahm nämlich einerseits die Souveräne und Prinzen von Europa, die Pairs, ferner die hohen Diener des Staates und der Kirche in England und Frankreich an der Zahl 1600 Namen, berechnete ihre Sterblichkeit in den verschiedenen Lebensperioden und stellte sie mit jenen in Vergleichung, die er bei 2000 ohne Unterschied aus den zwölf Bezirken von Paris ausgewählten, in verschiedenen Jahren und meist in den Spitälern gestorbenen Armen vorfand. Die bei beiden Gattungen von Personen in dem Alter von 25 Jahren bis an das natürliche Lebensende sich darstellende

Source: Czoernig (1831), p. 52.

5. Conclusion

Our article reviewed almost a quarter of century of Karl Czoernig's activities in the lead of the Austrian State statistical service as a succe and it was surely justified, that Czoernig received the honorary title "father of official statistics in the Austrian monarchy" in the XIXth century. He succeeded in building cutting-edge state statistic and achieved the recognition of office statistics in the Austrian monarchy as an important part of state government. Austrian state statistics during his management did not employ accountancy officials, but it employed specialized statisticians together with scientific workers instead, for example Czoernig, Joseph Hain[15], Adolf Ficker and others.

In another part of the paper we presented Czoernig as native of Bohemia and provincial patriot, that devoted two statistical publications to the hometown of his parents – Liberec. He also cooperated with German Magazine of Prague Museum and his chief editor – František Palacký. It was in this periodical where he published an extensive explanation of political arithmetic, discipline, yet often neglected or even despised[16], that soon became the main component of formulating modern statistics. At the time, Czoernig was definitely one of the leading representatives in the field of statistics in central Europe, and his successful participation in the International Statistical Congresses and later honorary membership in the International Statistical Institute confirm this claim.

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References

[1] Beniger, J. R., Robyn, D. L. 1978. Quantitative Graphics in Statistics: A Brief History. The American Statistician, vol. 32, iss. 1, pp. 1–11.

[2] Czoernig, K. J. 1831. Abhandlungen aus dem Gebiete der politischen Arithmetik. Ueber Volkszählungen und das Gesez der Sterblichkeit im Allgemeinen und mit besonderer Rüksicht auf England. Jahrbücher des böhmischen Museums für Natur- und Länderkunde, Geschichte, Kunst und Literatur, vol. II, iss. 1, pp. 22–53; iss. 2, pp. 161–183.

[3] Czoernig, C. J. 1827-1828. Beyträge zur Landeskunde Böhmens. Archiv für Geschichte, Statistik und Kunst, vol. XVIII (1827), iss. 74–75, pp. 409–412; iss. 77–78, pp. 425–429; iss. 83–84, pp. 457–461; iss. 85, pp. 467–470; iss. 86–87, pp. 477–480; vol. XIX (1828), iss. 39, pp. 201–205.

[4] Czoernig, C. J. 1829. Topographisch-historisch-statistische Beschreibung von Reichenberg. Nebst einem Anhange, die Beschreibung von Gablonz enthaltend. Wien: Friedrich Volke, 216 p.

[5] Geschichte und Ergebnisse der zentralen amtlichen Statistik in Österreich 1829–1979. Wien 1979.

[6] Kodera, J., Závodský, P., Šimpach, O. 2015. Jan Stocký, Southern Bohemia and Mathematical Methods in Economics. In: Hronová, S., Vltavská, K. (ed.): Applications of

[15] For Hain's merits in introducing Quételet's mathematical and probabilistic methods into statistics in Austria, see e.g. Přibram (1913), pp. 717–719.

[16] Let us remember the signs of the Tabellenknechte (slaves, the servants of tables), that used to refer to political arithmetic or their statistics, giving preference to numerical data before the verbal evaluation, often unfounded.

Mathematics and Statistics in Economics – AMSE 2015. Prague: University of Economics Prague, Oeconomica Publishing House, 11 p.

[7] Kořalka, J. 2006. Palacký und Czoernig: Eine tschechisch-deutsche Zusammenarbeit im Geist des böhmischen Landespatriotismus. In: Nations, cultures et sociétés d'Europe centrale aux XIX^{e} et XX^{e} siecles: Melanges offerts á Bernard Michel. Paris: Publications de la Sorbonne, pp. 139–155, ISBN 2-85944-550-1.

[8] Přibram, K. 1913. Die Statistik als Wissenschaft in Österreich im 19. Jahrhundert nebst einem Abrisse einer allgemeinen Geschichte der Statistik. Statistische Monatschrift, vol. XXXIX, pp. 661–739.

[9] Von der Direction der Administrativen Statistik zum Österreichischen Statistischen Zentralamt 1840–1990. 1990. Wien.

[10] Wurzbach, C. V. 1858. Biographisches Lexikon des Kaiserthums Oesterreich, III. Theil. Wien 1858.

[11] Závodský, P. 1992. Vývoj statistické teorie na území Československa do roku 1848. Praha: FSÚ a Infostat, pobočka Praha, 200 p.

[12] Závodský, P., Šimpach, O. 2014. J. N. Müllner and the Beginnings of Demographic Statistics in the Czech Lands. In: The 8th International Days of Statistics and Economics. Slaný: Melandrium, pp. 1687–1695. ISBN 978-80-87990-02-5.

[13] Závodský, P., Šimpach, O. 2015. Statistical and Topographical Description of the Czech Lands in the 18th and 19th Century. In: The 9th International Days of Statistics and Economics. Slaný: Melandrium, pp. 1804–1813. ISBN 978-80-87990-06-3.

[14] Závodský, P., Šimpach, O. 2016. The Development of Provincial Statistical Office in Bohemia in Historical Context. In: The 10th International Days of Statistics and Economics. Slaný: Melandrium, pp. 2096–2106. ISBN 978-80-87990-10-0.